查询EVAL-ADF4213EB2供应商

2.35GHz Dual Evaluation Board For PLL Frequency Synthesizer

EVAL-ADF4213EB2

FEATURES

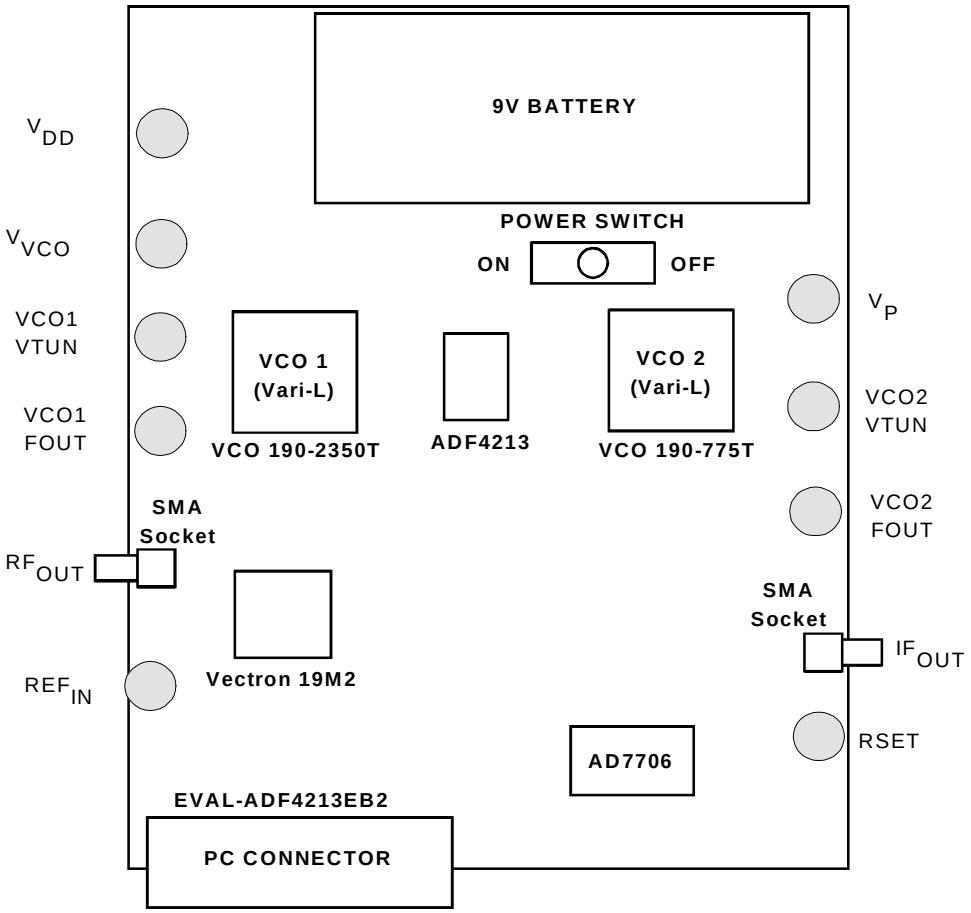
Self-Contained Board including Synthesizer, RF VCO and loop filter for generating frequencies of 2.3GHz to 2.4GHz and IF VCO and loop filter for generating frequencies of 700MHz to 850MHz
Designed for 20kHz Loop Bandwidth
Accompanying Software allows complete control of synthesizer functions from PC using Windows 95/98/NT
Battery Operated: Choice of 3V or 5V supplies
On Board Monitoring of Current and Voltage.
Typical Phase Noise Performance of -83.5dBc/Hz (RF side) @ 1kHz offset
Typical Phase Noise Performance of -90dBc/Hz (IF side) @ 1kHz offset.

GENERAL DESCRIPTION

This board is designed to allow the user to evaluate the performance of the ADF4213 Dual Frequency Synthesizer for PLL's (Phase Locked Loops). The block diagram of the board is shown below. It contains the ADF4213 synthesizer, a pc connector, SMA connector for the reference input, power supplies and RF and IF output. There is also a loop filter for both sides (20kHz bandwidth) and an RF and IF VCO on board. A cable is included with the board to connect to a pc printer port.

The package also contains windows software to allow easy programming of the synthesizer.

BLOCK DIAGRAM



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Hardware Description

The evaluation board comes with a cable for connecting to the printer port of a PC. The silk screen and cable diagram for the evaluation board are shown below. The board schematic is shown on pages 3 and 4.

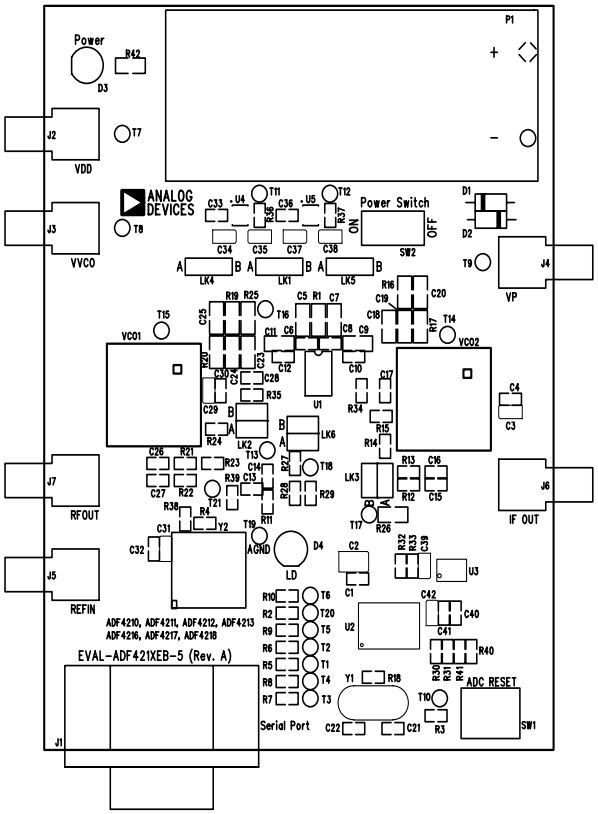

Figure 1. Evaluation Board Silkscreen

The board is powered from a single 9V battery. The power supply ciruitry allows the user to choose either 3V or 5V for the ADF4213 V_{DD} and V_P, and for the VCO supply. The default settings are 3V for the ADF4213 V_{DD} and 5V for the ADF4213 V_P and for the VCO supply. **It is very important to note that the ADF4213 V_{DD} should never exceed the ADF4213 V_P. This can damage the device.**

All components necessary for LO generation are on-board. The 19.2 MHz TCXO from Vectron provides the necessary Reference Input. The PLL on the RF side is made up of the ADF4213, passive loop filter (20kHz bandwidth) and the VCO 190-2350 from Vari-L. The PLL on the IF consistes of the ADF4213, passive loop filter (20kHz bandwidth) and the VCO 190-775. The respective outputs are available at RFOUTand IFOUT through standard SMA connectors. If the user wishes they may use their own power supplies and reference input. In this case, they need to insert SMA connectors to as shown on the silkscreen and block diagram.

The AD7706 A/D converter is used to monitor the power supply voltage and current consumption of the ADF4213.

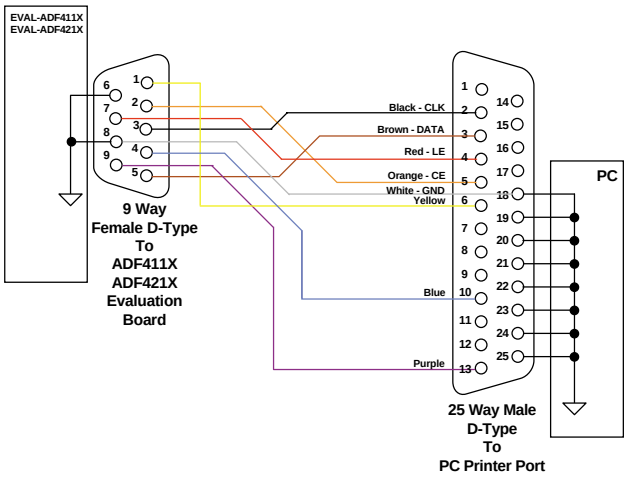

Figure 2. PC Cable Diagram

This helps the user pick the optimum synthesizer settings for power consumption and also provides an alert if the battery voltage is too low to sustain the required 3V or 5V for the board supply.

The RF loop component values are for a 2.35GHz output, with 5mA CP current, VCO 190-2350T, 200kHz channel spacing and 20kHz loop band-width.

The component values for the IF side are for a 760MHz output, 5mA CP current, VCO190-775T, 200kHz channel spacing and 20kHz loop band-width.

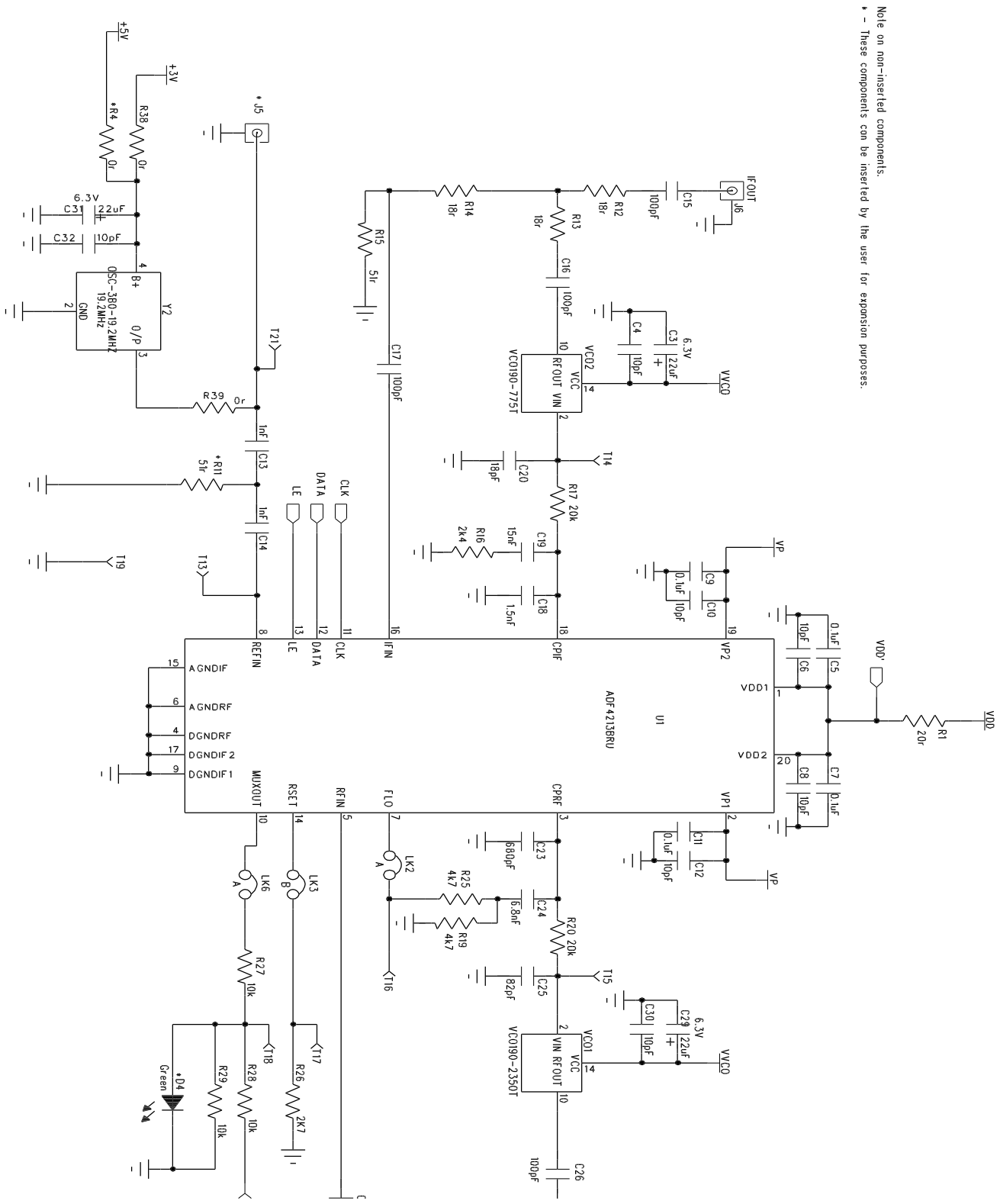

Figure 3. Evaluation Board Circuit Diagram (Page 1)

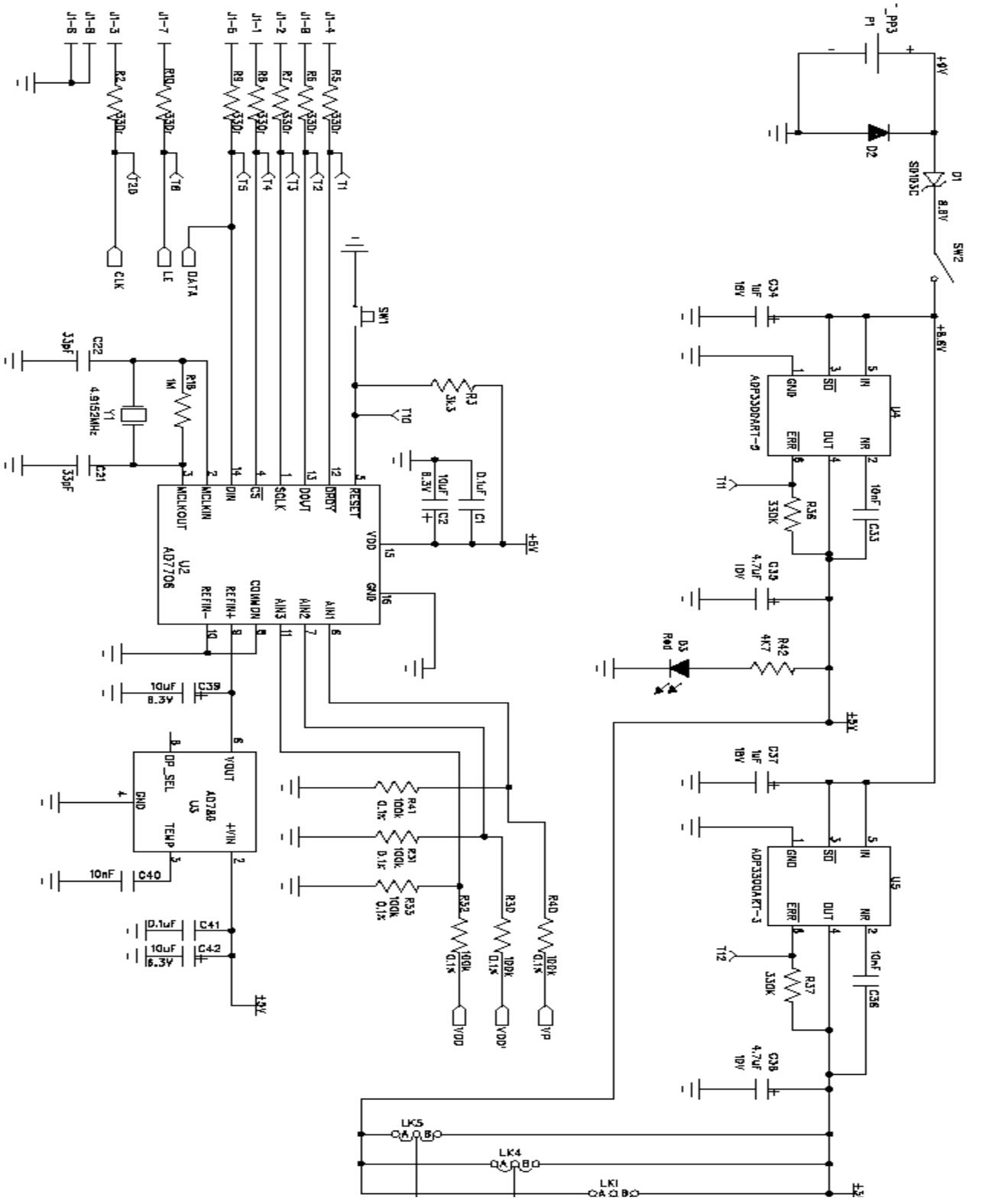

Figure 4. Evaluation Board Circuit Diagram (Page 2)

Software Description

The software comes on a CD. If the user runs "ADF4XXXEvaluationSoftware.exe" on the CD, then the install wizard installs the software. Follow the on-screen directions. The software will be installed in a default directory called "C:\Program Files\Analog Devices\ADF4xxx Evaluation Software". To run the software, simply double click on "ADF4XXX Eval Software.exe".

The front panel of the evaluation board software is shown below.

When the main software screen appears, follow the steps below for initial setup to interface to the part.

Click on Choose Device, and the Device window will appear. Choose the ADF4213 and click OK.

The settings for this Evaluation Board are saved under options and presets. Select EVAL-ADF4213EB2. To manually configure the settings do the following:

Click on the value on the front page to bring up a submenu. Change the value of the parameter. Click the OK button. Use this to change the output frequency, PFD Frequency, Reference Input etc.

The Evaluation board feaures an A/D converter whcih allows the volatges supplied and current drawn by the part to be displayed on screen. Press the "Update Voltage and Current Supply" readback these values.

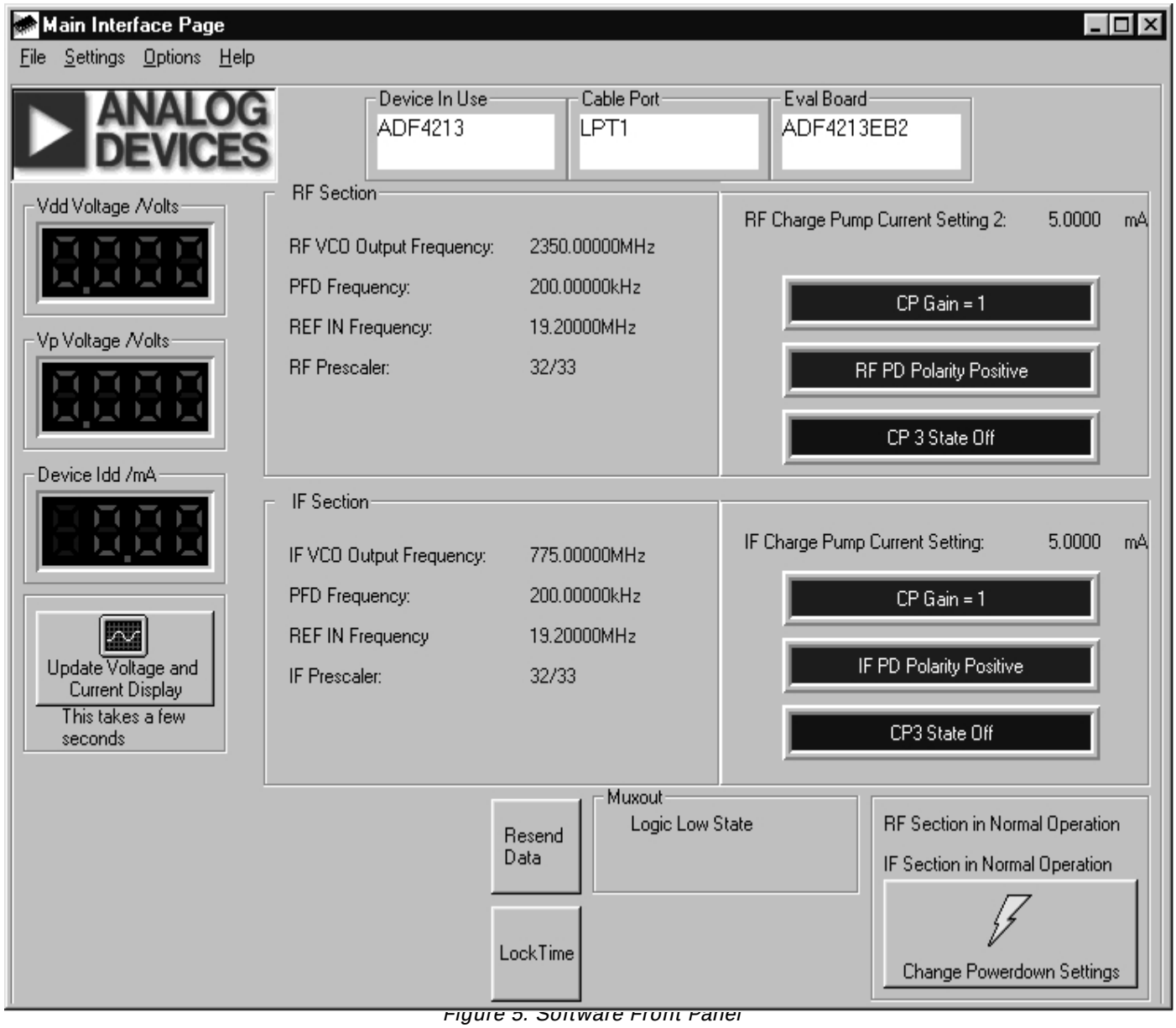

Figure 5. Software Front Panel

Qty	Reference	Description	Manufacturer	PCB DECAL	VALUE
1	U1	ADF4213BRU	ADI	TSSOP-20	ADF4213BRU
1	U2	AD7706BR	ADI	SO16WB	AD7706BR
1	U3	AD780AR	ADI	SO8NB	AD780AR
1	U4	ADP3300ART-5	ADI	SOT23-6	ADP3300ART-5
1	U5	ADP3300ART-3	ADI	SOT23-6	ADP3300ART-3
1	VCO1	2350MHz VCO	Vari-L		VCO190-2350T
1	VCO2	775MHz VCO	Vari-L		VCO190-775T
1	Y1	4.9152MHz Crystal	Vectron International	HC49 low profile	VXA1-1011
1	Y2	19.2 MHz TCXO	Vectron International		OSC-3B0-19.2MHZ
1	D1	SD103C Schottky Diode	General Semiconductor	DO35	SD103C
1	D2	IN4001		D035	FEC 365-117
1	D3	Red Low Power LED	Vishay	LED	FEC 657-130
1	D4	Green Low Power LED (Do Not Insert)	Vishay	LED	FEC 657-141
6	C1 C5 C7 C9 C11 C41	Multi Layer Ceramic Capacitor	Murata	Case 0603	0.1uF
1	C2	Tantalum Capacitor	AVX	CAP\TAJ_B	10uF 6.3V
3	C3 C29 C31	Tantalum Capacitor	AVX	CAP\TAJ_A	22uF 6.3V
7	C4 C6 C8 C10 C12 C30 C32	Multi Layer Ceramic Capacitor	Murata	Case 0603	10pF
2	C13-14	Multi Layer Ceramic Capacitor	Murata	Case 0603	1nF
6	C15-17 C26-28	Multi Layer Ceramic Capacitor	Murata	Case 0603	100pF
1	C18	Multi Layer Ceramic Capacitor	Murata	Case 0805	1.5nF
1	C19	Multi Layer Ceramic Capacitor	Murata	Case 0805	15nF
1	C20	Multi Layer Ceramic Capacitor	Murata	Case 0805	18pF
2	C21-22	Multi Layer Ceramic Capacitor	Murata	Case 0603	33pF
1	C23	Multi Layer Ceramic Capacitor	Murata	Case 0805	680pF
1	C24	Multi Layer Ceramic Capacitor	Murata	Case 0805	6.8nF
1	C25	Multi Layer Ceramic Capacitor	Murata	Case 0805	82pF
3	C33 C36 C40	Multi Layer Ceramic Capacitor	Murata	Case 0603	10nF
2	C34 C37	Tantalum Capacitor	AVX	CAP\TAJ_A	1uF 16V
2	C35 C38	Tantalum Capacitor	AVX	CAP\TAJ_A	4.7uF 10V
2	C39 C42	Tantalum Capacitor	AVX	CAP\TAJ_A	10uF 6.3V
1	R1	Resistor (Surface Mount)	Bourns	Case 0805	20r 1.0%
7	R2 R5-10	Resistor (Surface Mount)	Bourns	Case 0603	330r 1.0%
1	R3	Resistor (Surface Mount)	Bourns	Case 0603	3k3 1.0%
1	R4	Do Not Insert	Bourns	Case 0603	
1	R11	Do Not Insert	Bourns	Case 0603	
6	R12-14 R21-23	Resistor (Surface Mount)	Bourns	Case 0603	18r 1.0%
2	R15 R24	Resistor (Surface Mount)	Bourns	Case 0603	51r 1.0%
1	R16	Resistor (Surface Mount)	Bourns	Case 0805	2k4 1.0%
1	R17	Resistor (Surface Mount)	Bourns	Case 0805	20k 1.0%
1	R18	Resistor (Surface Mount)	Bourns	Case 0603	1M 1.0%
1	R19	Resistor (Surface Mount)	Bourns	Case 0805	4k7 1.0%
1	R20	Resistor (Surface Mount)	Bourns	Case 0805	20k 1.0%
1	R25	Resistor (Surface Mount)	Bourns	Case 0805	4k7 1.0%
1	R26	Resistor (Surface Mount)	Bourns	Case 0603	2k7 1.0%
3	R27-29	Resistor (Surface Mount)	Bourns	Case 0603	10k 1.0%
6	R30-33 R40-41	Resistor (Surface Mount)	Meggitt	Case 0603	100k 0.1%
2	R34-35	Resistor (Surface Mount)	Bourns	Case 0603	0r 1.0%
2	R36 R37	Resistor (Surface Mount)	Bourns	Case 0603	330k 1.0%
2	R38 R39	Resistor (Surface Mount)	Bourns	Case 0603	0r 1.0%
1	R42	Resistor (Surface Mount)	Bourns	Case 0603	4k7 1.0%
1	SW1	Push Button Switch	Omron	SW\PB-SMALL	FEC 176-986
1	SW2	SPDT Switch - (Washable)	Apem	SW_SIP-3P	FEC 150-559
21	T1-21	Red Testpoint	W Hughes	TESTPOINT	FEC-240-345
1	J1	9 PIN D-TYPE MALE (HORIZ)	McMurdo	DCON9M	FEC 150-750
4	J2 J3 J4 J5 J6	Do Not Insert		SMA	
2	J6 J7	GOLD 50Ω SMA SOCKET	Pasternack	SMA	PE4118
3	LK1 LK4 LK5	3 pin header	Harwin	SIP-3P	FEC 512-047
3	LK2-A LK3-B LK6-A	Wire link			
3	LK1 LK4 LK5	Shorting Shunt	Harwin		FEC 150-410
4	Each Corner	Rubber Stick-On Feet	3M		FEC 148-922
2	P1	Pair PCB snap-on battery connector	Keystone	BATT_PP3	FEC 723-988
1	P1	9V PP3 Battery	Duracell		FEC 908-526
1	PCB	EVAL-ADF421XEB-5 (Rev. A)			
	Parts Free issued by ADI.				
	Leave position blank - Do not insert.				